UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66518

CSAH NO. 1

OVER THE

CANNON RIVER OVERFLOW

DISTRICT 6 - RICE COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 27A)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge 66518, Pier 1 and the East and West Abutments, were found to be in good condition with no defects of structural significance observed. Light scaling of the concrete surfaces was observed on all substructures units, and two vertical cracks were observed in the center and at the upstream quarter point of the East Abutment. A minor local scour depression and a moderate to heavy accumulation of timber debris was observed at the upstream end of Pier 1.

INSPECTION FINDINGS:

(A) A local scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1.

(B) Light scaling of the concrete surfaces was observed on all substructures units from the channel bottom to 1 foot above the waterline with a maximum penetration of ¼ inch.

(C) 1/32 inch to 1/8 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom.

(D) A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline.

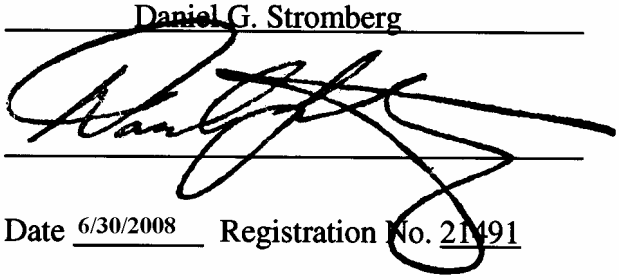
RECOMMENDATIONS:

(A) Monitor the timber drift accumulation at the pier during future inspections, and if found to be progressing, removal may become warranted to inhibit any adverse effects for pier or surrounding channel bottom.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

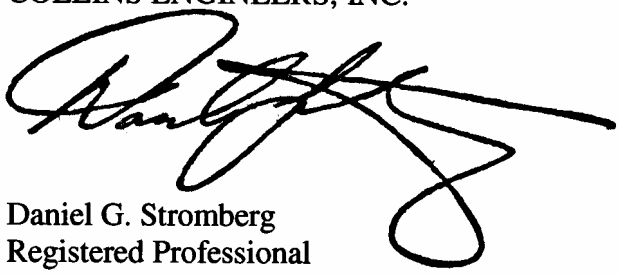
Daniel G. Stromberg



Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 66518

Feature Crossed: Cannon River Overflow

Feature Carried: CSAH No. 1

Location: District 6 - Rice County

Bridge Description: The superstructure consists of two spans of multiple steel girders supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and one reinforced concrete pier. The pier is supported by a spread footing founded on bedrock.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 23, 2007

Weather Conditions: Sunny, 60°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 2.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 1 and the East and West Abutments.

General Shape: The pier consists of a reinforced concrete shaft supporting a concrete hammerhead cap. The shaft is supported by a rectangular spread footing founded on bedrock. The abutments consist of reinforced concrete breast walls with tapered wingwalls. No design drawings with footing details for the abutments were available.

Maximum Water Depth at Substructure Inspected: Approximately 5.0 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the north end of Pier 1.

Water Surface: The waterline was approximately 11.5 feet below reference.
Assumed Waterline Elevation = 910.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 6

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code I/91

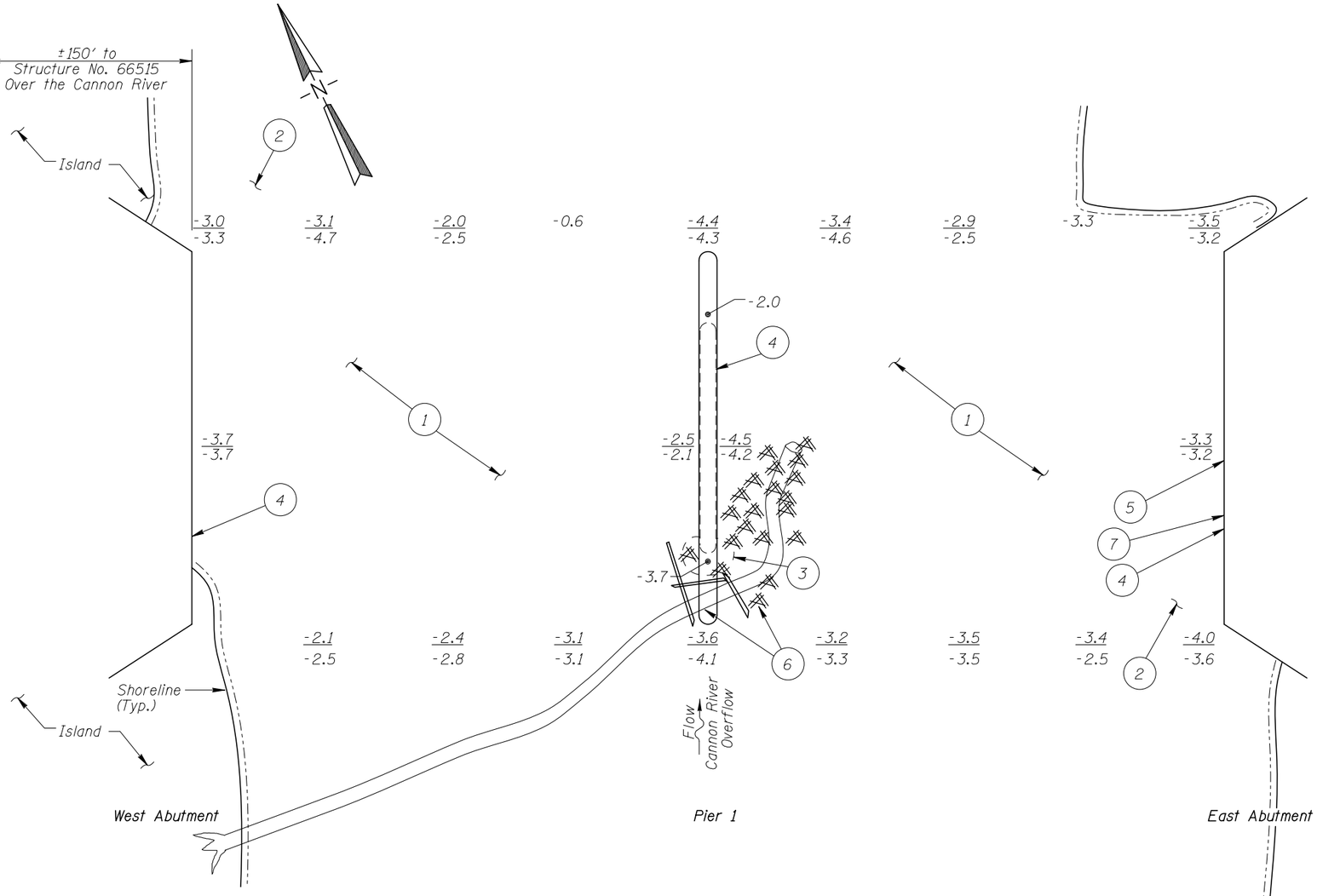
Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

Photograph 1. View of West Abutment, Looking North.

Photograph 2. View of Pier 1, Looking West.

Photograph 3. View of East Abutment, Looking Southwest.



SOUNDING PLAN

GENERAL NOTES:

1. The East and West Abutments and Pier 1 were inspected at this bridge.
2. At the time of inspection on October 23, 2007, the waterline was located approximately 11.5 feet below the top of the cap at the North end of Pier 1. This corresponds to a waterline elevation of 910.0 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom material consisted of silty sand and clay with 6 inches to 1 foot of probe rod penetration.

(2) The channel bottom material consisted of cobbles, 8 inch diameter and smaller, with 1 inch of maximum probe rod penetration.

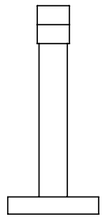
(3) Scour depression, 6 feet in diameter and 1.5 feet deep, observed at the upstream nose of Pier 1.

(4) Light scaling of concrete was observed on all substructure units from the channel bottom to 1 foot above the waterline with a maximum penetration of 1/4 inch.

(5) A 1/8 inch wide vertical crack was observed in the face of the East Abutment extending from the beam seat to the channel bottom.

(6) A moderate to heavy accumulation of timber debris was observed at the upstream end of Pier 1, including a 12 inch diameter tree and smaller branches, extending from the channel bottom to 3 feet above the waterline.

(7) Vertical crack 1/32 inch wide was observed in the face of the East Abutment extending from bridge seat to channel bottom.



TYPICAL END VIEW OF PIER

Legend

-9.0	Sounding Depth (10/23/07)
-9.0	Sounding Depth (9/27/1997)
	Timber Debris

Note:

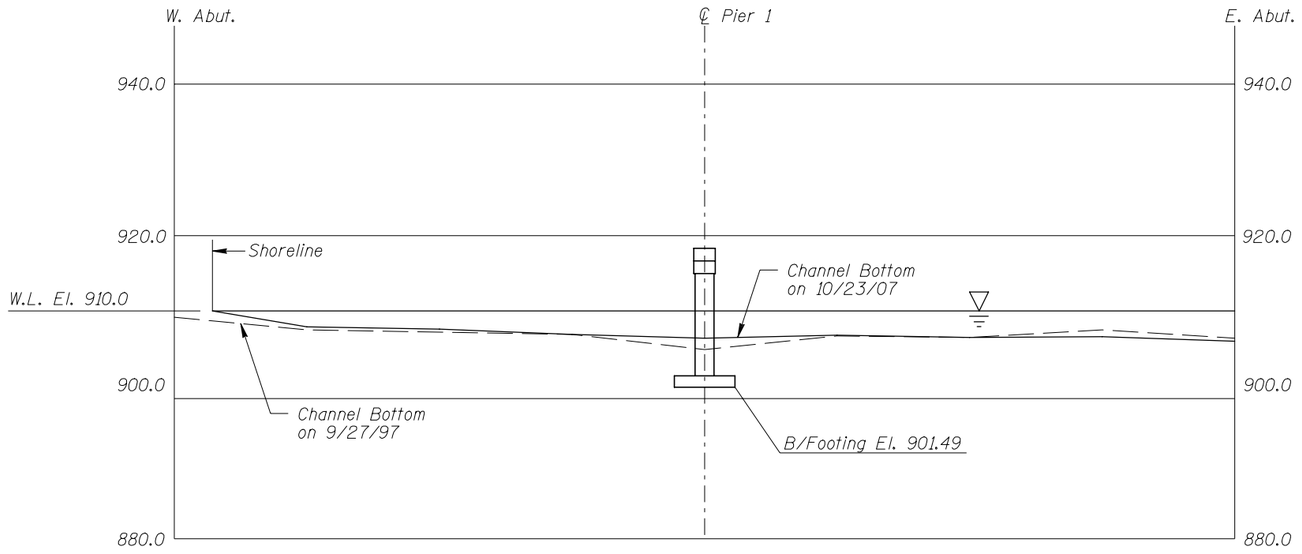
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

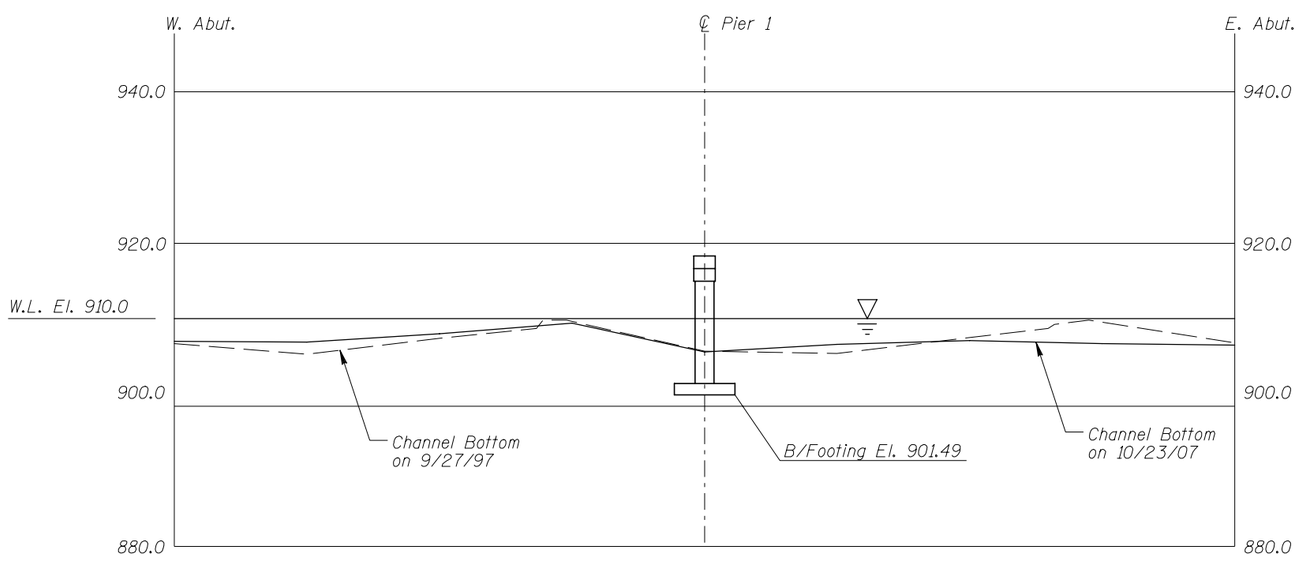
STRUCTURE NO. 66518
OVER THE CANNON RIVER OVERFLOW
DISTRICT 6, RICE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT.2007
Checked By: VR		Scale: NTS
Code: 52210118		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

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UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: LJ	COLLINS ENGINEERS INC 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT.2007
Checked By: VR		Scale: 1"=20'
Code: 52210118		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007
ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.
BRIDGE NO: 66518 WEATHER: Sunny, 60°F
WATERWAY CROSSED: Cannon River Overflow
DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR
_____ OTHER
PERSONNEL: Clayton G. Brookins, Valerie Roustan
EQUIPMENT: Scuba, Scraper, Sounding Pole, Camera, Probe Rod, U/W Light
TIME IN WATER: 3:25 p.m.
TIME OUT OF WATER: 3:45 p.m.
WATERWAY DATA: VELOCITY 2.0 f.p.s
VISISBILITY 1.0 feet
DEPTH 5.0 feet maximum at the South Abutment
ELEMENTS INSPECTED: The West and East Abutments and Pier 1
REMARKS: Overall, the concrete was smooth and sound and in good condition with no defects of structural significance. A local scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1. Light scaling of the concrete surfaces was observed on all substructures units from the channel bottom to 1 foot above the waterline. 1/32 inch to 1/8 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom. A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline.

FURTHER ACTION NEEDED: X YES _____ NO

Monitor the timber drift accumulation at the pier during future inspections, and if found to be progressing, removal may become warranted to inhibit any adverse effects for pier or surrounding channel bottom.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 66518
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Cannon River Overflow

INSPECTION DATE October 23, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	West Abutment	3.7’	N	7	N	9	N	7	8	7	N	N	7	7	N	N	N	N	N
	Pier 1	5.0’	N	7	N	9	N	7	7	N	N	6	6	7	N	N	N	N	N
	South Abutment	4.0’	N	7	N	9	N	7	8	7	N	N	7	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete was smooth and sound and in good condition with no defects of structural significance. A local scour depression, 6 feet in diameter and 1.5 feet deep, was observed at the upstream end of Pier 1. Light scaling of the concrete surfaces was observed on all substructures units from the channel bottom to 1 foot above the waterline. 1/32 inch to 1/8 inch wide vertical cracks were observed in the center and at the upstream quarter point of the East Abutment breast wall, extending from the beam seat to the channel bottom. A moderate to heavy accumulation of timber debris, including a 12 inch diameter tree, was observed at the upstream end of Pier 1 extending from the channel bottom to 3 feet above the waterline.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.